

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P#

Luminaire Tested: **FLDSQ4C80D010 FEU4C809030 F4LC-CSSQ-MW**

Issue Date: 12/13/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P#  
 Test Lab: INNOVATION CENTER  
 Issue Date: 12/13/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: FAIL-SAFE  
 Catalog Number: FLDSQ4C80D010 FEU4C809030 F4LC-CSSQ-MW  
 Description: 4 INCH 8000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

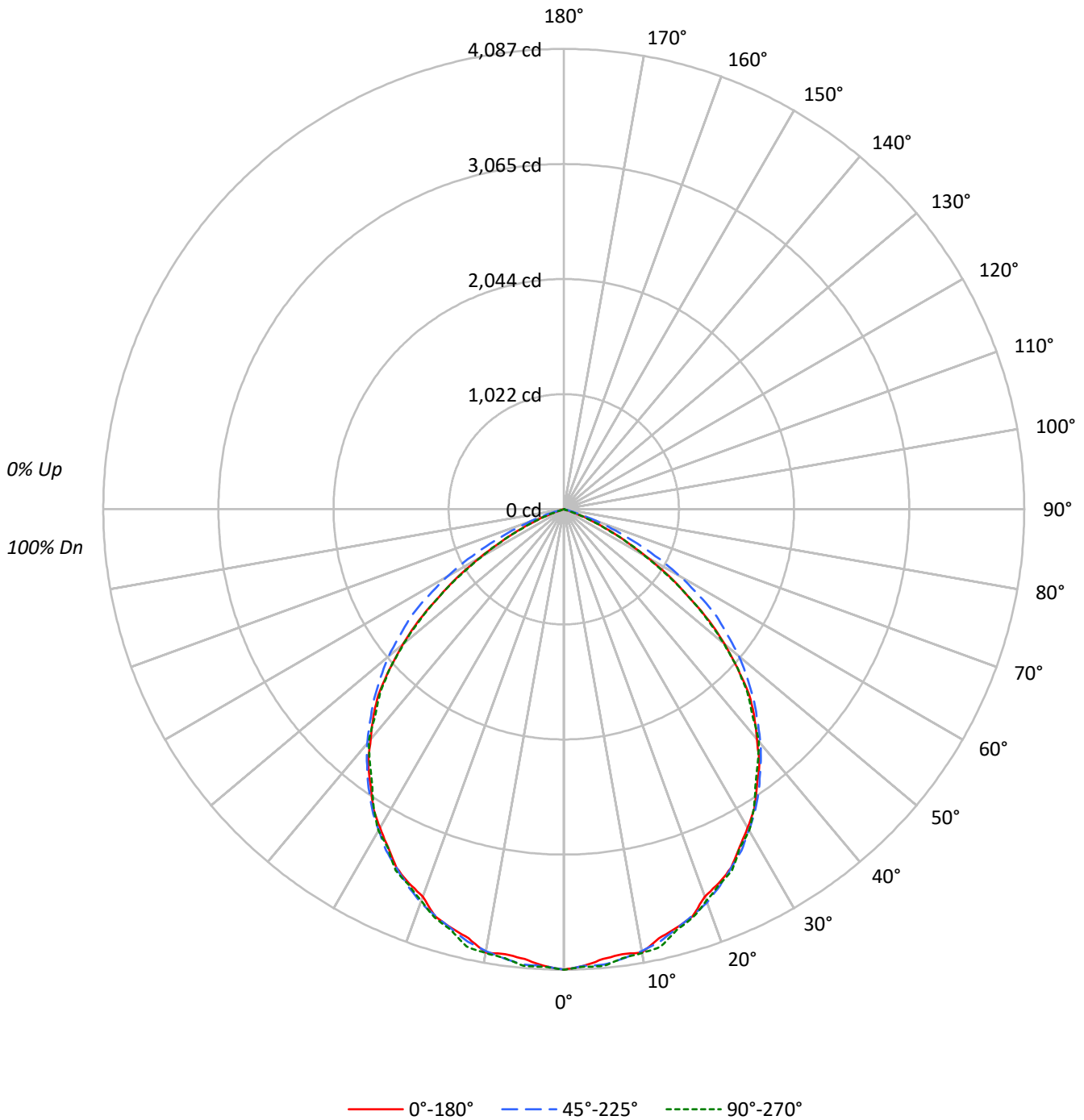
Lumens per Lamp: N/A  
 Luminaire Lumens: 8731.0 lumens  
 Efficiency: N/A  
 Efficacy: 97.6 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 89.5  
 Input Voltage (V):  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	GONIO 1 IN0055	4/22/2021	10/22/2021
Power Meter	XITRON 2801 IN0197	12/1/2020	12/1/2021
AC Power Source	CHROMA 61505 IN0196	12/1/2020	12/1/2021
DC Power Supply	AGILENT E3634A IN0198	11/30/2020	11/30/2021
Room Thermometer	ONSET IN0143	12/1/2020	12/1/2021

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20			
RC	80				70				50				30				10	0		
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50	30	10	0
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102	102	102	100
1	111	108	104	101	109	105	102	100	101	99	96		97	95	94		94	92	91	89
2	103	96	91	86	100	94	89	85	91	87	83		88	84	81		85	82	79	77
3	95	86	79	74	93	85	78	73	82	76	72		79	74	71		77	73	69	67
4	88	77	70	64	86	76	69	63	74	67	63		71	66	62		69	65	61	59
5	81	70	62	56	79	69	61	56	67	60	55		65	59	54		63	58	54	52
6	75	63	55	49	73	62	55	49	61	54	49		59	53	48		57	52	48	46
7	70	58	50	44	68	57	49	44	55	49	44		54	48	43		53	47	43	41
8	65	53	45	40	64	52	45	39	51	44	39		50	44	39		49	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36		46	40	35		45	39	35	33
10	57	45	38	33	56	44	37	33	44	37	32		43	37	32		42	36	32	31

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	394379	394379	394379
5°	388011	393057	394181
10°	391361	390224	391919
15°	384507	385076	386235
20°	375567	381523	379746
25°	373943	373943	376413
30°	363516	366101	366758
35°	352172	355612	349439
40°	335651	342213	339291
45°	317669	324806	314504
50°	279760	304153	278019
55°	226580	278342	227572
60°	165787	230801	162449
65°	100754	164362	98106
70°	39299	88471	37691
75°	4325	23859	4325
80°	3278	3278	3278
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	385.8	4.4
10°-20°	1091.7	12.5
20°-30°	1619.9	18.6
30°-40°	1876.9	21.5
40°-50°	1799.6	20.6
50°-60°	1323.1	15.2
60°-70°	571.5	6.5
70°-80°	61.7	0.7
80°-90°	0.8	0.0
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	3097.4	35.5
0°-40°	4974.3	57.0
0°-60°	8097.0	92.7
0°-90°	8731.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	8731.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4087	4087	4087	4087	4087	
5°	4006	4046	4058	4064	4070	382
15°	3849	3872	3855	3861	3866	1085
25°	3512	3507	3512	3518	3536	1608
35°	2990	3007	3019	3013	2967	1870
45°	2328	2334	2380	2346	2305	1770
55°	1347	1486	1655	1480	1353	1212
65°	441	551	720	546	430	454
75°	12	18	64	12	12	36
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3
2.5°	4058.1	4104.5	4110.5	4081.3	4069.7	4052.4	4092.9	4064.0	4075.6	4064.0	4058.1
5°	4006.0	4058.1	4064.0	4064.0	4052.4	4046.5	4064.0	4058.1	4052.4	4040.8	4058.1
7.5°	3982.8	4011.7	4040.8	4006.0	4023.3	4017.6	4058.1	4040.8	4034.9	4034.9	4023.3
10°	3994.4	3988.5	4011.7	3976.9	3988.5	3976.9	4011.7	4011.7	4000.1	3988.5	3982.8
12.5°	3901.3	3947.7	3947.7	3942.0	3930.4	3912.9	3947.7	3971.2	3936.1	3936.1	3930.4
15°	3849.2	3860.8	3866.5	3866.5	3860.8	3872.4	3889.7	3866.5	3872.4	3843.3	3854.9
17.5°	3791.2	3767.9	3785.2	3773.6	3779.6	3791.2	3814.4	3814.4	3779.6	3773.6	3785.2
20°	3657.6	3727.2	3733.1	3698.3	3704.0	3704.0	3744.7	3709.9	3733.1	3704.0	3715.6
22.5°	3593.6	3640.0	3646.0	3599.5	3628.4	3593.6	3634.4	3582.0	3640.0	3599.5	3616.8
25°	3512.4	3506.7	3524.0	3500.8	3506.7	3506.7	3535.6	3512.4	3529.9	3506.7	3512.4
27.5°	3379.0	3425.4	3419.5	3396.3	3407.9	3402.2	3460.2	3396.3	3431.1	3402.2	3413.8
30°	3262.7	3303.4	3291.8	3268.6	3268.6	3251.1	3315.0	3297.5	3291.8	3291.8	3285.9
32.5°	3146.6	3152.5	3140.9	3146.6	3152.5	3129.3	3181.5	3158.2	3152.5	3158.2	3164.2
35°	2989.8	2989.8	3001.4	2984.1	3007.3	3007.3	3053.8	3024.6	3019.0	3001.4	3019.0
37.5°	2850.5	2833.2	2838.9	2838.9	2850.5	2862.1	2885.4	2873.8	2873.8	2856.5	2868.1
40°	2664.8	2653.2	2670.5	2670.5	2688.0	2688.0	2711.3	2699.6	2716.9	2716.9	2716.9
42.5°	2502.3	2502.3	2490.7	2508.0	2513.9	2508.0	2548.8	2542.8	2548.8	2537.1	2542.8
45°	2328.0	2328.0	2316.4	2310.7	2339.6	2333.9	2380.3	2362.8	2386.0	2374.4	2380.3
47.5°	2089.9	2119.1	2101.5	2119.1	2153.9	2159.8	2188.7	2177.1	2200.3	2183.0	2206.2
50°	1863.7	1863.7	1881.0	1904.2	1939.0	1945.0	1979.8	2003.0	2014.6	2020.3	2026.2
52.5°	1625.7	1619.7	1637.3	1666.2	1695.3	1718.5	1753.3	1788.2	1811.4	1846.2	1828.7
55°	1346.9	1358.5	1376.0	1410.8	1457.2	1486.1	1515.3	1561.7	1602.4	1619.7	1654.6
57.5°	1108.8	1097.2	1108.8	1155.2	1207.6	1230.8	1271.5	1318.0	1376.0	1410.8	1422.4
60°	859.1	865.1	876.7	917.4	957.9	992.7	1010.3	1085.6	1137.9	1172.8	1196.0
62.5°	632.9	644.5	656.1	691.0	731.5	760.6	789.5	853.5	899.9	934.7	957.9
65°	441.3	447.0	464.5	481.8	522.5	551.4	574.7	627.0	673.4	702.6	719.9
67.5°	272.9	278.6	290.2	313.6	342.5	365.7	388.9	423.8	464.5	493.4	499.3
70°	139.3	145.2	150.9	168.4	191.6	203.2	220.5	249.7	278.6	301.8	313.6
72.5°	46.4	46.4	52.3	64.0	75.6	87.2	92.9	122.0	145.2	156.8	162.5
75°	11.6	11.6	11.6	11.6	11.6	17.5	17.5	34.8	46.4	58.0	64.0
77.5°	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	11.6	11.6
80°	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3	4087.3
2.5°	4087.3	4075.6	4069.7	4075.6	4075.6	4069.7	4087.3	4110.5	4139.4	4064.0
5°	4081.3	4069.7	4081.3	4046.5	4064.0	4052.4	4075.6	4069.7	4092.9	4069.7
7.5°	4064.0	4040.8	4046.5	4029.2	4052.4	4023.3	4040.8	4075.6	4052.4	4017.6
10°	4006.0	3994.4	4034.9	3976.9	3965.3	3988.5	4034.9	4000.1	3988.5	4000.1
12.5°	3947.7	3947.7	3965.3	3918.8	3924.5	3936.1	3959.3	3936.1	3947.7	3976.9
15°	3884.0	3872.4	3901.3	3866.5	3860.8	3849.2	3872.4	3872.4	3884.0	3866.5
17.5°	3808.5	3791.2	3791.2	3779.6	3773.6	3802.8	3814.4	3820.1	3826.0	3802.8
20°	3715.6	3709.9	3727.2	3709.9	3715.6	3721.5	3721.5	3709.9	3762.0	3698.3
22.5°	3616.8	3634.4	3611.1	3599.5	3611.1	3622.7	3622.7	3628.4	3616.8	3605.2
25°	3518.3	3529.9	3535.6	3500.8	3518.3	3500.8	3541.5	3547.2	3524.0	3535.6
27.5°	3431.1	3413.8	3407.9	3384.7	3396.3	3390.6	3396.3	3396.3	3431.1	3384.7
30°	3297.5	3280.2	3285.9	3268.6	3274.3	3268.6	3274.3	3274.3	3297.5	3291.8
32.5°	3169.8	3152.5	3158.2	3140.9	3140.9	3146.6	3135.0	3135.0	3152.5	3140.9
35°	3047.9	3007.3	3013.0	3007.3	3013.0	2989.8	2989.8	2984.1	2995.7	2966.6
37.5°	2873.8	2856.5	2850.5	2844.8	2850.5	2838.9	2850.5	2833.2	2850.5	2827.3
40°	2716.9	2705.3	2711.3	2676.4	2676.4	2682.1	2670.5	2664.8	2670.5	2693.7
42.5°	2560.4	2537.1	2525.5	2513.9	2519.6	2502.3	2496.4	2484.8	2496.4	2473.2
45°	2374.4	2374.4	2368.7	2339.6	2345.5	2345.5	2322.3	2299.1	2304.8	2304.8
47.5°	2206.2	2194.6	2188.7	2159.8	2153.9	2148.2	2124.8	2107.5	2107.5	2089.9
50°	2020.3	2008.7	1991.4	1962.3	1950.7	1915.8	1898.5	1875.3	1852.1	1852.1
52.5°	1846.2	1805.5	1782.2	1735.8	1718.5	1701.0	1654.6	1637.3	1619.7	1602.4
55°	1637.3	1602.4	1556.0	1503.7	1480.5	1451.3	1404.9	1370.1	1346.9	1352.8
57.5°	1434.0	1376.0	1329.6	1259.9	1230.8	1213.3	1166.8	1120.4	1097.2	1097.2
60°	1184.4	1137.9	1079.9	1016.0	992.7	963.8	905.6	876.7	859.1	841.8
62.5°	946.3	911.5	859.1	777.9	760.6	731.5	691.0	656.1	638.6	638.6
65°	708.3	673.4	627.0	569.0	545.8	522.5	487.7	452.9	435.4	429.7
67.5°	499.3	458.6	418.1	371.7	354.1	342.5	307.7	284.5	272.9	267.0
70°	301.8	278.6	249.7	214.8	197.3	185.7	162.5	145.2	139.3	133.6
72.5°	156.8	139.3	116.1	92.9	81.2	69.6	58.0	46.4	40.7	40.7
75°	58.0	46.4	29.1	17.5	11.6	11.6	11.6	11.6	11.6	11.6
77.5°	11.6	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
80°	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)